

Claims

1. An apparatus for wrapping a one- or multi-part load (3) with at least one elastic foil hood (25) that is gathered into folds (26) and stretched and subsequently pulled over the one- or multi-part load (3), the gathered foil hood (25) being stretched and pulled down by means of a pull-down device (1) movable along the one- or multi-part load (3), and whereby the pull-down device (1) has four tensioning fingers (2) that are movable in planes perpendicular to a pull-down direction (5) and that each have a bow-shaped tensioning element (43) lying in this plane and, secured to it, a bow-shaped brace element (6) extending generally in the pull-down direction in order to be able to take on the gathered foil hood (25) in the respective corners of the one- or multi-part load (3) to be wrapped and to pull it down over the one- or multi-part load (3), characterized in that at least one of the tensioning fingers (2) is provided with a jaw-like holding device (14) that is engageable shortly before reaching an end position externally at least partially around in the region of the last fold (26a) to be pulled over the one- or multi-part load (3) shortly before reaching the pull-down position, in particular in the unfolded region of the foil hood (25) adjacent this fold (26a), and that clamp the regions of the foil hood (25) to the tensioning fingers (2) during stretching.

2. The apparatus according to claim 1, characterized in that the holding device (14) has a shape corresponding generally to an outside surface of the respective tensioning finger (2) in a contact region between the tensioning finger (2) and the holding device (14).

3. The apparatus according to claim 2, characterized in that the surface of the holding device (14) engageable with the foil hood (25) is arcuate.

4. The apparatus according to one of claims 1 to 3, characterized in that the holding device (14) is movable in a plane perpendicular to the pull-down direction (5).

5. The apparatus according to one of claims 1 to 4, characterized in that the holding device (14) is displaceable by a pivotal positioning lever (12) in the direction of the respective tensioning finger (2).

6. The apparatus according to one of claims 1 to 5, characterized in that at least surfaces of the holding device (14) engageable with the foil hood (24) have a friction-increasing surface.

7. The apparatus according to claim 6, characterized in that the surface has a friction-increasing coating (28).

8. The apparatus according to claim 6, characterized in that the surface has a soft coating (28), in particular sponge rubber.

9. The apparatus according to one of claims 6 to 8, characterized in that the surface has alternating raised and recessed regions.

10. The apparatus according to one of claims 1 to 9, characterized in that a separate gathering device is provided for gathering the foil hood (25).

11. The apparatus according to one of claims 1 to 10, characterized in that surfaces of the holding device (14) engageable with the foil hood (25) correspond to the minimal contact surface needed to avoid damaging the foil hood (25) during stretching taking into account the technical features and characteristics of the foil hood (25) as well as the amount of stretch.

12. A method of wrapping a one- or multi-part load (3) with at least one elastic foil hood (25) that is gathered into folds (26) and stretched and subsequently pulled over the one- or multi-part load (3), the gathered foil hood (25) being stretched and pulled down by means of a pull-down device (1) movable along the one- or multi-part load (3), and whereby the pull-down device

(1) has four tensioning fingers (2) that are movable in planes perpendicular to a pull-down direction (5) and that each have a bow-shaped tensioning element (43) lying in this plane and, secured to it, a bow-shaped brace element (6) extending generally in the pull-down direction in order to be able to take on the gathered foil hood (25) in the respective corners of the one- or multi-part load (3) to be wrapped and to pull it down over the one- or multi-part load (3), characterized in that at least one of the tensioning fingers (2) is provided with a jaw-like holding device (14) that is engageable shortly before reaching an end position externally at least partially around in the region of last fold (26a) to be pulled over the one- or multi-part load (3) shortly before reaching the pull-down position, in particular in the unfolded region of the foil hood (25) adjacent this fold (26a), and that clamp the regions of the foil hood (25) to the tensioning fingers (2) during stretching, at least one holding device (14) being applied with the respective tensioning finger (2) against the foil hood (25) before stretching of the foil hood (25) and being separated from the foil hood (25) after contact of the foil hood (25) with the one- or multi-part load (3).

13. The method according to claim 12, characterized in that at least one holding device (14) after pulling-off of the folds (26) shortly before separation of the foil hood (25) from the holding device (14) is brought back against the respective tensioning finger (2) to hold the foil hood (25).

14. A method of wrapping a one- or multi-part load (3) with at least one elastic foil hood (25) that is gathered into folds (26) and stretched and subsequently pulled over the one- or multi-part load (3), the gathered foil hood (25) being stretched and pulled down by means of a pull-down device (1) movable along the one- or multi-part load (3), in particular according to claim 12 or 13, characterized in that the gathered foil hood (25) to be pulled down over the one- or multi-part load (3) in a first step is stretched to a first great amount and in a second step the stretching of the foil hood (25) during the pull-down operation of the gathered foil hood (25) over the one- or multi-part load (3) is reduced somewhat but still maintained enough to permit the pulling down.

15. The method according to claim 14, characterized in that the reduction of stretching is effected during the pull-down operation of the foil hood (25) over the one- or multi-part load (3) continuously, in particular uniformly.

16. The method according to claim 14, characterized in that the reduction of stretching is effected during the pull-down operation of the foil hood (25) over the one- or multi-part load (3) in steps, in particular in multiple steps.

17. The method according to claim 16, characterized in that the reduction of stretching takes place during the first third of the pull-down operation.

18. The method according to claim 17, characterized in that the reduction of stretching is effected at a spacing of 5 to 20 cm above the one- or multi-part load (3), preferably at 10 cm above the top of the one- or multi-part load (3).

19. The method according to one of claims 14 to 18, characterized in that the foil hood (25) stretched to a great amount in the first step is at the start of the pull-down operation held by at least one holding device (14) and the holding device (14) is separated from the foil hood (25) in the second step with reduction of the stretching to a reduced amount.